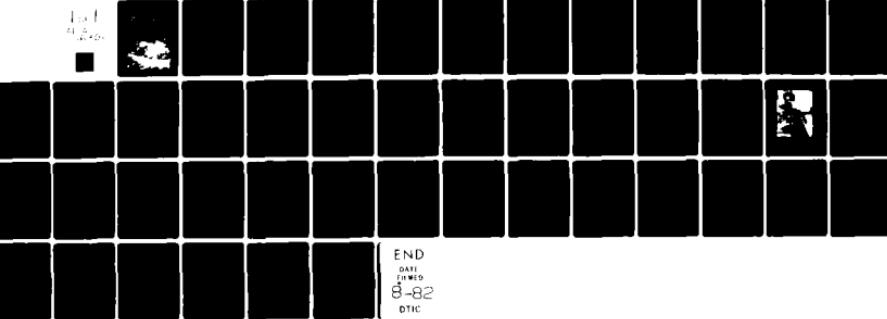
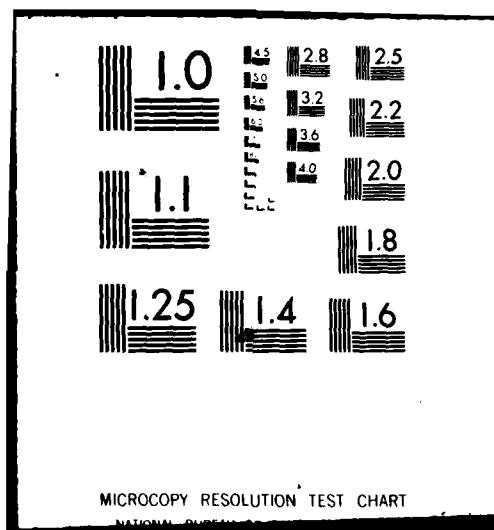


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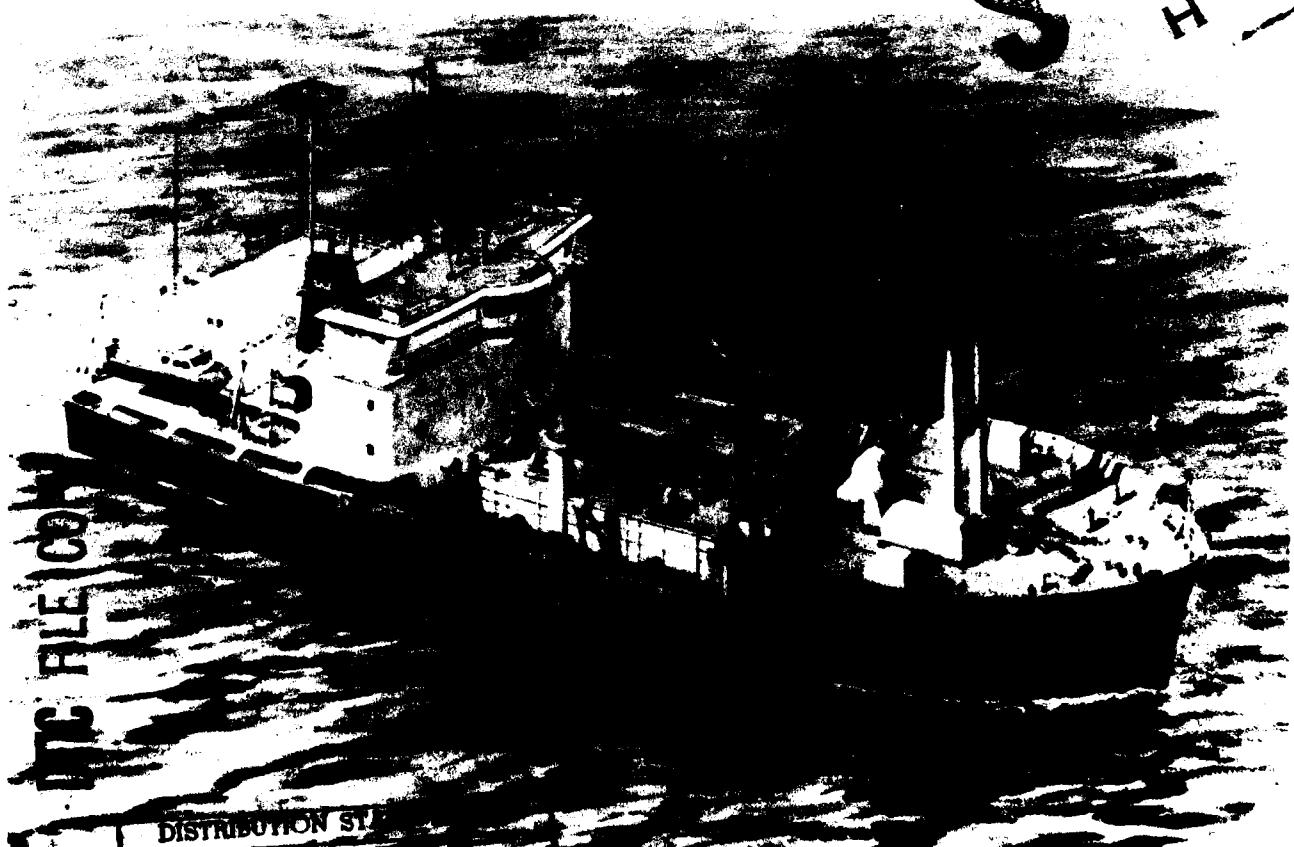
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1980 REPORT TO CONGRESS ON ADMINISTRATION OF OCEAN DUMPING ACTIVITIES

PUBLIC LAW 92-532
(MARINE PROTECTION, RESEARCH,
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REPORT TO CONGRESS
ON
ADMINISTRATION
OF
OCEAN DUMPING ACTIVITIES

Prepared by the U. S. Army Corps of Engineers
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Kingman Building
Ft. Belvoir, VA 22060

May 1982

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EXECUTIVE SUMMARY

During CY 1980, 45.7 million cubic yards (m.c.y.) of dredged material were discharged into open ocean waters. This represents a decrease of 27.1 m.c.y. from the 1979 yardage. Most of the decrease (21.3 m.c.y.) occurred in the New Orleans District of the U. S. Army Corps of Engineers (Corps) and was due primarily to the fact that there was much less sediment to be dredged from the Mississippi River below New Orleans this year. Also, the Atchafalaya River, Louisiana project which had 6.3 m.c.y. of material removed in 1979, was not dredged in 1980. Other significant decreases in ocean disposal of dredged material from 1979 to 1980 occurred at the Mud Dump Site, where dredged material from New York Harbor is disposed, and at the mouth of the Columbia River, Oregon and Washington. ↗

The Corps initiated a program in 1977 to encourage more participation by the dredging industry in Federally sponsored projects. As a result, privately-owned equipment is becoming a dynamic factor in the performance of the Federal dredging program. Industry dredges handled 53.6 percent of the total ocean disposed material dredged from Federal projects during CY 1980, as compared to 41.3 percent of the CY 1979 total yardage. Presently, six privately-owned hopper dredges are in operation. Four additional hopper dredges are under construction, with scheduled delivery of three vessels during CY 1981 and another in CY 1982. Also, industry is considering the construction of one more hopper dredge in addition to those already mentioned.

With the completion of the Dredged Material Research Program (DMRP) in 1978, it became obvious that a mechanism was needed to implement the results of the DMRP at the technical or field level. In response to this need, the Dredging Operations Technical Support (DOTS) Program was established by the Office, Chief of Engineers (OCE) in April 1978, through the

Environmental Laboratory of the U. S. Army Engineer Waterways Experiment Station located in Vicksburg, Mississippi.

DOTS provides advisory assistance to all Corps elements (including OCE) in solving site-specific problems associated with the environmental effects of dredging and dredged material disposal. Additionally, the DOTS program includes monitoring efforts to evaluate long-term effects of dredged material disposal, evaluation of alternatives to ocean disposal, and related activities in support of the Corps' regulatory program as it applies to the ocean disposal of dredged material. During Fiscal Year 1980, DOTS personnel acted upon 135 major requests for assistance, many of which pertained either to ocean dumping or feasible alternatives. DOTS also responded to requests from many other Federal agencies. DOTS personnel are also involved in the regulatory program of the Corps of Engineers, and work in close coordination with other regulatory agencies in order for dredging operations to continue in an economic manner while adhering to the intent of environmental legislation.

To date, the Environmental Protection Agency (EPA) has granted interim designation to 128 ocean sites which are used for the disposal of dredged material. Contract efforts are presently underway by the EPA to obtain required baseline data and prepare environmental impact statements for permanent designation of 59 of the Corps top priority ocean disposal sites. These efforts are being directly supported by the Corps, and technical review of this effort is being undertaken by DOTS personnel.

CHAPTER I: INTRODUCTION

This is the Fifth Annual Ocean Dumping Report to Congress, submitted by the Secretary of the Army as required by Public Law 94-326, Section 2, which amended the Marine Protection, Research, and Sanctuaries Act (MPRSA). This report was prepared by the U. S. Army Corps of Engineers (Corps) and describes the Corps' administration of the program dealing with the ocean disposal of dredged material during CY 1980. This report deals only with that dredged material which is disposed of in ocean waters.

Section 103, MPRSA, provides that before any ocean disposal of dredged material takes place, a determination be made by the Secretary of the Army (Secretary) to ensure that the proposed ocean disposal will not unreasonably degrade or endanger human health, amenities, or the marine environment, ecological system, or economic potentialities. The Secretary shall use criteria established by the Environmental Protection Agency (EPA) pursuant to Section 102 (a) MPRSA. Prior to the ocean disposal of dredged material, the Corps considers a number of other disposal alternatives that may include diked upland disposal, beach restoration, island creation, wildlife habitat creation, and strip-mine reclamation. In many instances, however, there is no environmentally or economically feasible alternative to the ocean disposal of dredged material.

Being signatory to the International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Ocean Dumping Convention), the United States is responsible for preparing an annual report that summarizes all of the U. S. dredged material ocean dumping reports for the calendar year. This report is called the IMCO report, after the Inter-Governmental Maritime Consultative Organization, which is assigned secretariat duties related to the Convention.

The Corps has assumed responsibility for all IMCO Ocean Dumping Reports related to the dumping of dredged material from the U. S. Inquiries regarding this report should be addressed to: U. S. Army Engineer Water Resources Support Center, ATTN: WRSC-D, Kingman Building, Ft. Belvoir, Virginia, 22060.

CHAPTER II: STATISTICS

GENERAL

In CY 1980, 45,748,809 cubic yards of dredged material weighing 60,866,098 tons were discharged into ocean waters. These figures were derived from detailed reports submitted from the district offices of the Corps. These basic data are presented in tabular format as Appendix A.

UNITS OF MEASUREMENT

The standard unit of measurement accepted by industry and the Corps to identify amounts of dredged material is the cubic yard. Ocean disposal data within this report are stated as in situ cubic yards of sediments dredged, and, where applicable, tonnage is also provided for comparison. Tonnage, however, is strictly a relative term and varies widely, depending primarily on the type of material dredged and dredging material plant utilized.

GEOGRAPHICAL DISTRIBUTION

Nationally, 44 dredged material disposal sites (DMDS) were used to receive the 45.9 million yards of material disposed in ocean waters during CY 1980. These sites are listed in Table 1 by coordinates, name, and the amount of yardage and corresponding tonnage each site received.

26.1 million cubic yards (m.c.y.) of dredged material were dumped in the Gulf of Mexico. This amounts to 57 percent of the CY 1980 total. Two sites - Mississippi River, Baton Rouge to the Gulf of Mexico, Southwest Pass, LA, and Disposal Area "C", Calcasieu River and Pass, LA., received 15.2 m.c.y., which is more than one-half of all the dredged material disposed of in the Gulf of Mexico in CY 1980. As in past years the Mud Dump DMDS in the New York District (3.4 m.c.y.) and the Mouth of Columbia River Sites in the Portland District (2.8 m.c.y.) received significant quantities of dredged material. Once again the four coastal Corps districts of Philadelphia, Baltimore, Norfolk, and Seattle reported no ocean disposal activities during CY 80.

All ocean-dumped dredging data reported for CY 1980 were identified as being deposited in disposal sites either inside or outside of the three-mile limit to the territorial sea (Table 2). 41.4 percent of the ocean-dumped dredged material was placed within the three-mile limit. No material dredged under Section 103 permits was placed inside of the three-mile limit. The remaining yardage, or 58.6 percent of the total, was deposited in sites farther than three miles offshore.

TABLE 1
OCEAN DISPOSAL SITE LOCATIONS AND DISPOSED YARDAGES FOR CALENDAR YEAR 1980

LATITUDE	LONGITUDE	SITE NAME/DISTRICT LOCATION	TOTAL CUBIC YARDS	TOTAL TONS
----------	-----------	-----------------------------	----------------------	---------------

ATLANTIC OCEAN SECTION

1. 43° 31' 06"	70° 01' 48"	Portland, ME	1,013,259	1,367,898
2. 42° 25' 54"	70° 34' 54"	Marblehead, MA	92,100	124,335
3. 40° 21' 48"	73° 51' 28"	Mud Dump, NY	3,231,802	4,362,933
4. 33° 48' 00"	78° 01' 00"	Wilmington Harbor, NC	975,663	1,365,640
5. 34° 39' 00"	76° 42' 00"	Morehead City Harbor, NC	247,769	346,804
6. 33° 10' 58"	79° 06' 22"	Georgetown Harbor, SC	321,524	546,591
7. 32° 38' 35"	79° 45' 39"	Charleston Harbor, SC	905,032	1,538,554
8. 32° 09' 24"	80° 36' 12"	Port Royal Harbor, SC	105,422	179,217
9. 31° 57' 00"	80° 46' 00"	Savannah River, GA	741,064	1,111,760
10. 31° 01' 00"	81° 17' 00"	Brunswick Harbor, GA	1,940,760	2,911,140
11. 30° 41' 30"	81° 18' 30"	Fernandina Harbor, FL	214,385	317,974
12. 30° 21' 00"	81° 18' 00"	Jacksonville Harbor, FL	1,077,562	1,598,024
13. 28° 18' 44"	80° 31' 16"	Canaveral Harbor, FL	1,979,080	2,935,355
14. 27° 28' 00"	80° 12' 00"	Ft. Pierce Harbor, FL	14,592	21,643
15. 26° 45' 30"	79° 58' 21"	Palm Beach Harbor, FL	208,378	309,065
16. 18° 30' 40"	66° 09' 00"	San Juan Harbor, PR	1,308,971	1,941,455

ATLANTIC OCEAN SUBTOTAL 16 SITES	14,377,363	20,978,388
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GULF OF MEXICO SECTION

1. 26° 37' 06"	82° 19' 21"	Charlotte Harbor, FL	351,589	521,474
2. 27° 37' 06"	82° 59' 41"	Tampa Harbor, FL	652,650	968,005
3. 27° 35' 34"	82° 52' 01"	Tampa Harbor, FL	658,637	976,855
4. 27° 35' 43"	82° 50' 33"	Tampa Harbor, FL	1,530,621	2,270,204
5. 27° 35' 25"	82° 53' 30"	Tampa Harbor, FL	200,000	296,638
6. 30° 09' 00"	88° 07' 00"	Mobile, AL	190,300	268,323
7. 30° 10' 00"	88° 57' 00"	Gulfport, MS	369,230	520,614
8. 29° 28' 00"	89° 05' 00"	Miss. River Gulf Outlet, LA	1,095,106	1,308,652
9. 28° 53' 00"	89° 26' 30"	Miss. River Southwest Pass, LA	6,315,082	6,668,727
10. 29° 42' 30"	93° 20' 30"	Calcasieu R. & Pass Site "C", LA	8,870,096	9,459,957
11. 29° 17' 00"	94° 39' 00"	Galveston Harbor & Channel, TX	1,524,269	1,547,589
12. 28° 54' 00"	95° 17' 00"	Freeport Harbor, TX	1,095,122	1,694,153
13. 28° 24' 00"	96° 18' 00"	Matagorda Ship Channel, TX	1,551,512	2,643,776
14. 29° 49' 00"	97° 00' 00"	Corpus Christi Ship Channel, TX	1,663,879	2,835,249

GULF OF MEXICO SUBTOTAL 14 SITES	26,068,093	31,080,246
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PACIFIC OCEAN SECTION

1. 33° 37' 06"	118° 17' 24"	Los Angeles, CA	60,000	90,000
2. 37° 45' 06"	122° 35' 45"	San Francisco Channel Bar., CA	52,920	78,150
3. 40° 45' 44"	124° 15' 42"	Humboldt Bay Harbor, CA	317,062	495,365
4. 42° 01' 47"	124° 16' 21"	Chetco River Entrance, OR	54,300	101,149
5. 43° 07' 37"	124° 27' 00"	Coquille River Entrance, OR	2,500	4,439
6. 43° 21' 47"	124° 22' 25"	Coos Bay Site "E", OR	193,939	325,280
7. 43° 22' 30"	124° 21' 57"	Coos Bay Site "F", OR	955,436	1,602,289
8. 43° 40' 00"	124° 14' 00"	Umpqua River Entrance, OR	199,800	353,541
9. 44° 01' 23"	124° 09' 22"	Siuslaw River Entrance, OR	94,200	159,522
10. 44° 36' 24"	124° 05' 40"	Yaquina Bay and Harbor Ent., OR	81,146	142,884
11. 46° 12' 40"	124° 06' 30"	Mouth Col. R. Site "A", OR	11,142	18,705
12. 46° 14' 10"	124° 10' 30"	Mouth Col. R. Site "B", OR	118,686	199,244
13. 46° 15' 27"	124° 05' 37"	Mouth Col. R. Site "E", OR	2,675,722	4,491,836
14. 64° 31' 00"	165° 25' 00"	Nome, AK	13,000	22,000
15. 21° 14' 30"	157° 54' 30"	Honolulu Harbor, HI	473,500	701,100

PACIFIC OCEAN SUBTOTAL 15 SITES	5,303,353	8,785,464
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TOTAL (All Sections) 45 SITES	45,748,809	60,866,098
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TABLE 2

VOLUMES OF DREDGED MATERIAL DISPOSED RELATIVE TO 3-MILE LIMIT

	<u>INSIDE 3-Mi Limit</u>		<u>OUTSIDE 3-Mi Limit</u>	
	<u>Cubic Yards</u>	<u>Percent of Total</u>	<u>Cubic Yards</u>	<u>Percent of Total</u>
CORPS VESSEL	15,021,221	32.8	6,214,326	13.6
CONTRACT* VESSEL	3,904,813	6	18,862,730	41.2
103 AUTHORITY	<u>0</u>	<u>0.0</u>	<u>1,745,719</u>	<u>3.8</u>
TOTAL	18,926,034	41.4	26,822,775	58.6

* Private sector vessels under contract on Federal projects.

DISPOSAL FROM FEDERAL PROJECTS

Congressionally authorized Federal projects accounted for the majority of all U. S. ocean disposed dredged material in CY 1980. In terms of cubic yards, 96.3 percent of all the material originated from Corps of Engineers projects. The balance, 3.7 percent, resulted from Section 103 permitted ocean disposals.

The Corps conducts dredging operations under two types of Congressional appropriations: maintenance dredging and new

work dredging. Maintenance dredging accounted for 92.3 percent of the total material deposited in the ocean from Corps projects while 7.7 percent was generated from new work projects.

New work dredging was performed on only two projects involving ocean disposal activities. The widening and deepening of Tampa Harbor, which is a continuation of work initiated in CY 1977, accounted for 3.0 m.c.y. of material. The other new work project was in Honolulu Harbor, from which 0.4 m.c.y. of material was dredged and disposed of in designated ocean sites.

DISPOSAL UNDER SECTION 103

Section 103 of Public Law 92-532 MPRSA authorized the Corps District Engineers to issue permits to public and private concerns for the transportation and disposal of dredged material in ocean waters. In CY 80, 1.7 m.c.y. was disposed of under this authority. This represents 3.8 percent of all dredged material disposed of in the ocean. The amount of material dumped was divided almost equally between private (50.9 percent) and public (49.1 percent) permittees. Public permittees include Federal, state, and local agencies. In each of the prior three years the public permittees disposed of more than 80 percent of the total amount of dredged material dumped under Section 103 permits.

Table 3 displays the distribution of permit activity in each of the Corps districts. Historically, the New York District has been the most active and continued as such in 1980 with 45 applications under consideration.

TABLE 3
SECTION 103 PERMIT APPLICATION ACTIVITY FOR CY 1980

DIVISION/DISTRICT	Carried Forward From CY1979	Apps. Received CY1980	Apps. W'drawn CY1980	Permit Issued CY1980	Permit Denied CY1980	Carried Forward To CY1980
NED/NEW ENGLAND DIST:	10	12	2	13	0	7
NAD/NEW YORK DIST:	13	32	4	14	0	27
NAD/PHILADELPHIA DIST:	0	0	0	0	0	0
NAD/BALTIMORE DIST:	0	0	0	0	0	0
NAD/NORFOLK DIST:	0	0	0	0	0	0
SAD/WILMINGTON DIST:	0	0	0	0	0	0
SAD/CHARLESTON DIST:	0	0	0	0	0	0
SAD/SAVANNAH DIST:	1	0	0	1	0	0
SAD/JACKSONVILLE DIST:	4	6	1	5	0	4
SAD/MOBILE DIST:	0	0	0	0	0	0
LMVD/NEW ORLEANS DIST:	0	0	0	0	0	0
SWD/GALVESTON DIST:	0	0	0	0	0	0
SPD/LOS ANGELES DIST:	2	0	0	1	0	1
SPD/SAN FRANCISCO DIST:	0	0	0	0	0	0
NPD/PORTLAND DIST:	1	1	0	0	0	2
NPD/SEATTLE DIST:	0	0	0	0	0	0
NPD/ALASKA DIST:	0	0	0	0	0	0
POD/HONOLULU DIST:	1	0	0	0	0	1
TOTAL	32	51	7	34	0	42

USE OF INDUSTRY DREDGES

The Corps of Engineers does not use Government-owned equipment for all its dredging. In CY 1980, 51.8 percent of the material disposed in the ocean was handled by privately-owned dredges working under contract to the Corps. The percentages of dredged material disposed of in the ocean by privately-owned dredges under Corps contract in CY 1979 and CY 1978 were 41.3 and 10.6 percent respectively. This increase in industry participation is due, in large part, to positive response by industry to the Industry Capability Program initiated by the Corps of Engineers in Fiscal Year 1977. Since the beginning of this program, six new industry hopper dredges have been placed in service.

By the end of CY 1980, the industry fleet of hopper dredges included the LONG ISLAND, a large class dredge with a volumetric hopper capacity of 16,000 cu yd; three medium-class dredges, the MANHATTAN ISLAND, the DODGE ISLAND, and the SUGAR ISLAND, each with a volumetric hopper capacity of 3,600 cu yd; the MANSON, a small-class dredge with a volumetric hopper capacity of 1,600 cu yd; and the ATCHAFAKYA, a small-class hopper dredge with a volumetric hopper capacity of 1,300 cu yd. Industry also has under construction four additional seagoing hopper dredges: one large class (about 8,800 cu yd) with expected delivery in 1982; two medium-class dredges, the EAGLE I (6,300 cu yd capacity) and the PADRE ISLAND (3,600 cu yd capacity), with delivery scheduled in 1981; and the MERMONTAU, a small-class dredge (1,300 cu yd capacity) with scheduled delivery in 1981. There are plans under consideration by industry for the construction of at least one more hopper dredge.

With the reduction of the Corps fleet toward the minimum fleet level in response to Public Law 95-269 (minimum fleet to meet emergency, national defense, and national security dredging requirements), industry has and will continue to undertake a greater percentage of Federally sponsored ocean-disposal activites.

COMPARISON WITH PRIOR YEARS

The 45.7 m.c.y. of dredge material disposed in ocean waters in CY 1980 represents a 37.2 percent decrease from CY 1979 (72.8[#] m.c.y.), see Figure 1. A close inspection of Figure 1 reveals that such a significant change in the volume of dredged material dumped in the ocean from one year to the next is not unusual. It shows that for only one 1-year time lapse (1974-1975), the differential was less than 25 percent. The principal contributor to the amount of dredged material disposed in the ocean and to the considerable flucuations in volumes is the New Orleans District. Due to varying flood and drought conditions in the Mississippi River drainage area, New Orleans District's recent ocean disposal volume has fluctuated from a high of 54.6 m.c.y. in CY 1974 to a low of 3.8 m.c.y. in CY 1977. In CY 1979 New Orleans District disposed of 37.6 m.c.y. of dredged material in the ocean. This figure dropped to 16.3 m.c.y. in CY 1980. This 21.3 m.c.y. decrease represents 78.6 percent of the total 27.1 m.c.y. decline in ocean dumped dredged material between CY's 1979 and 1980.

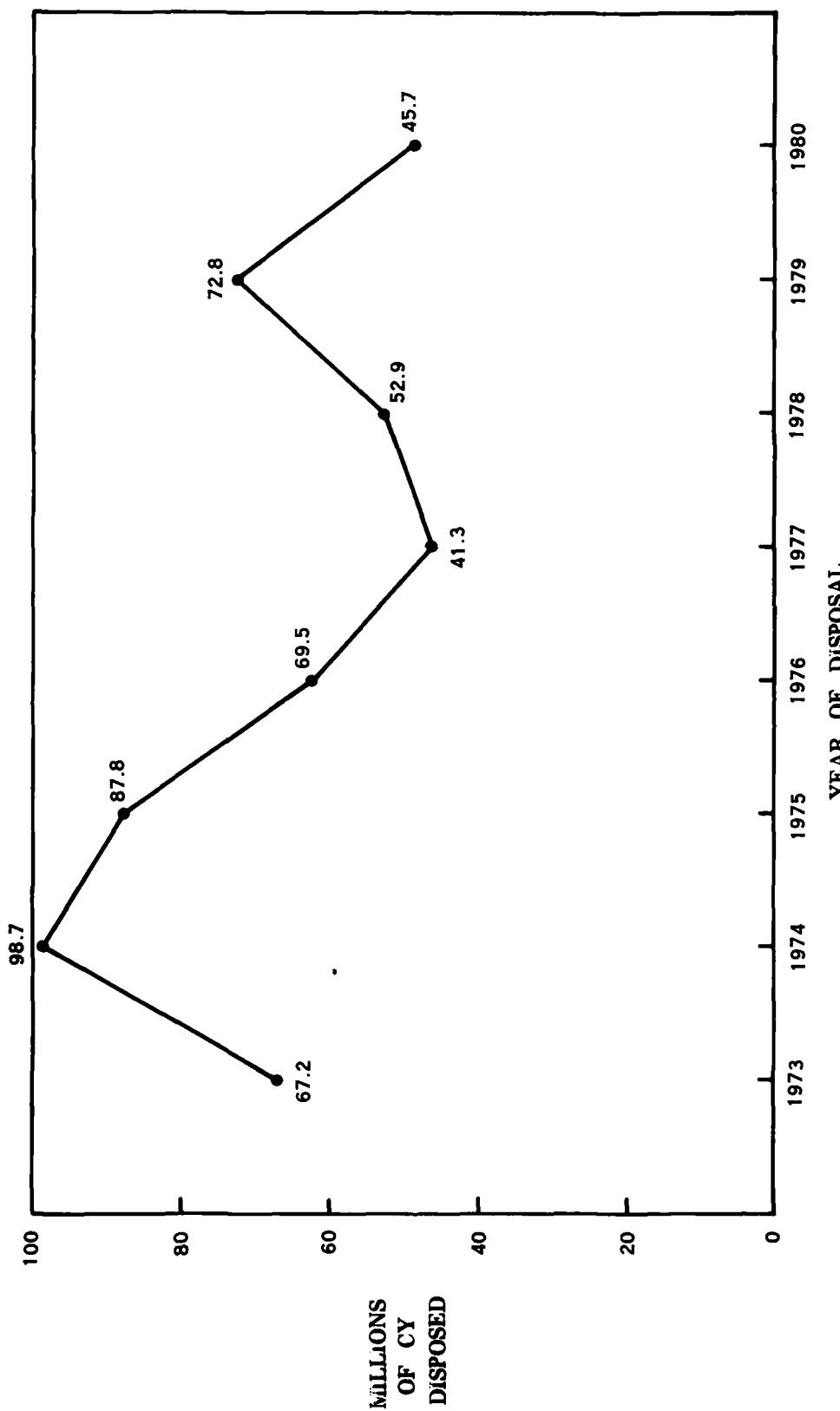


FIGURE 1
TOTAL ANNUAL VOLUMES OF DREDGED
MATERIAL DISPOSED IN OCEAN WATERS

NEW WORK

The widening and deepening of the Tampa Harbor Channels was responsible for the disposal of 3.0 m.c.y. of dredged material in the Gulf of Mexico. A like amount of new work dredging was disposed in the Gulf in CY 1979. Before this project is complete, an additional 8.4 m.c.y., will be disposed in the Gulf. This disposal activity is scheduled to occur in CY's 1981, 1982, and 1983. The only other new work dredging occurred in Honolulu Harbor where 392,000 cu yds were removed and disposed of in the ocean. The volume of material dredged from new work projects is expected to increase considerably in the next decade due to the anticipated deepening of coastal ports to accommodate deep draft coal carriers.

Due to the urgency of this undertaking, procedures are being implemented to expedite the dredging of these channels by streamlining the process by which dredging projects are approved and funded. Baltimore, Hampton Roads, Mobile, and New Orleans/Baton Rouge are existing coal ports and are among the candidates for deepening within the next decade. We anticipate that about 120 m.c.y. of material would be dredged from these four projects and dumped in the ocean in the deepening operations. Most of the material, approximately 87 m.c.y., would come from the channel leading to Hampton Roads.

CHAPTER III: RESEARCH

INTRODUCTION

In the early 1970's, concern over the environmental impacts of dredging to maintain navigable waterways and harbors, and the disposal of dredged materials, reached the stage where Federal legislation was necessary. However, it was recognized that the technical base for the initial legislation was inadequate and a comprehensive nationwide research program was authorized by Congress (Public Law 91-611).

Responding to the legislation, the Corps of Engineers undertook the Dredged Material Research Program (DMRP) via the Waterways Experiment Station (WES) in Vicksburg, Mississippi. Initiated in 1973 the DMRP met all of its objectives in the planned 5 year time frame at a cost of \$32.5 million. The final summary on the DMRP was presented in the 1978 Report to Congress.

It became apparent during the conduct of the DMRP that it would be necessary to continue the technology transfer activities, after a program of such magnitude was completed, for the results to have maximum benefits. Also, the need was apparent to continue monitoring selected DMRP field sites to better establish long-term trends and to verify and refine engineering and operational procedures developed during the program. Locations of all sites are shown in Figure 2. In addition, there is a continuing requirement to conduct research to support the Corps' regulatory program. To meet these needs, the Dredging Operations Technical Support (DOTS) Program was established by the Office, Chief of Engineers (OCE) in April 1978, and responsibility was assigned to the WES Environmental Laboratory (EL).

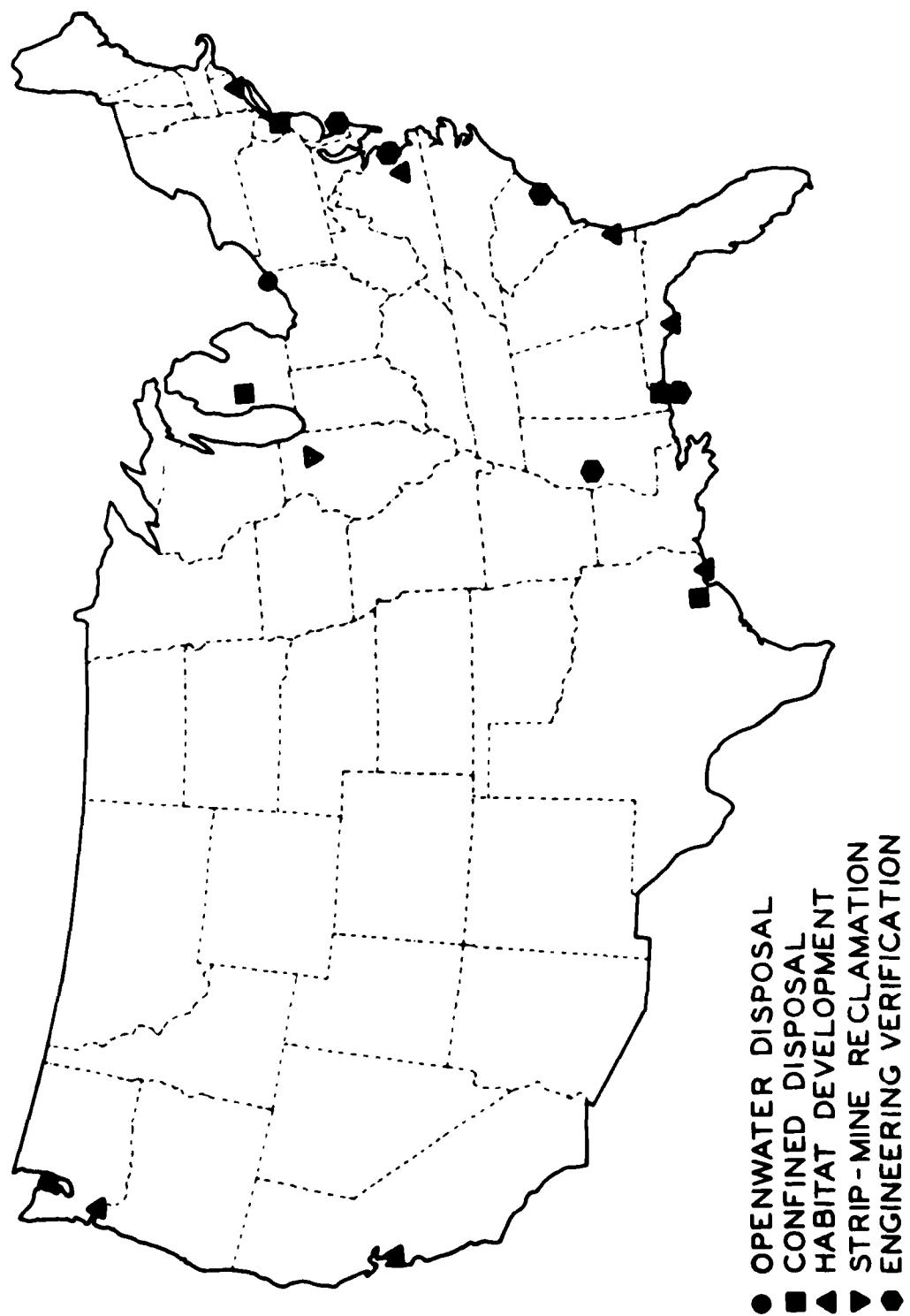


FIGURE 2
Location of DOTS Field Sites

The long-term monitoring and verification studies and the regulatory research relative to ocean disposal will be discussed in this chapter. The discussion is divided into two parts; primary and secondary activities. Primary activities relate directly to ocean/open-water disposal, while secondary activities relate to discussion of technology transfer activities and proposed research.

TECHNOLOGY TRANSFER

Advisory teams with DMRP technical and management expertise have been in existence since April 1978, to provide Corps operating elements and OCE with rapid-response assistance in solving site-specific problems associated with the environmental effects of dredging and dredged material disposal.

In FY 1980, 135 major requests for assistance from 36 Corps elements were acted upon. Many requests involved technical guidance on ocean disposal activities and evaluation of alternatives to ocean disposal.

Assistance has been provided for such functions as briefings and conducting workshops for districts and other groups, developing study plans and project monitoring strategies, preparing guidelines and criteria for regulatory programs, analyzing disposal alternatives (including habitat development and productive uses), designing effluent treatment facilities, and providing expert testimony in hearings and other litigation.

OCE assigned to DOTS the responsibility of resolving all technical environmental matters related to the Corps dredging and regulatory (dredged and fill) programs. In addition, DOTS provides a technical representative to the London Ocean Dumping Convention.

Requests for assistance were not limited to Corps elements. DOTS teams also responded to requests from a number of other Federal agencies.

PRIMARY ACTIVITIES

Ocean Disposal Site Designation

PL 92-532, as amended, requires that before ocean disposal sites can receive final EPA designation for continuing use, environmental assessments must be prepared, using existing data or data collected through field studies. Although site designation efforts on a number of major sites are being carried out under contract with Interstate Electronics Corporation, data for the remaining sites and new sites will need to be developed by Corps field elements. For further details see Chapter IV.

Even though most ocean disposal sites will have various unique features, a handbook of general guidance for site-survey procedures is being developed. The handbook will cover such topics as study design, sampling gear, analytical procedures, and interpretation of results. It has undergone field review and is expected to be available early in CY 1981.

Regulatory Activities

Implementation of the regulations for the disposal of dredged material continue to evolve and become more refined as additional data become available. Current efforts are directed toward the establishment of an environmentally sound basis for the continuing development of criteria and guidelines for Section 103 of PL 92-532 (Marine Protection Research and Sanctuaries Act) and Section 404 of PL 92-500 (FWPCA Amendments of 1977).

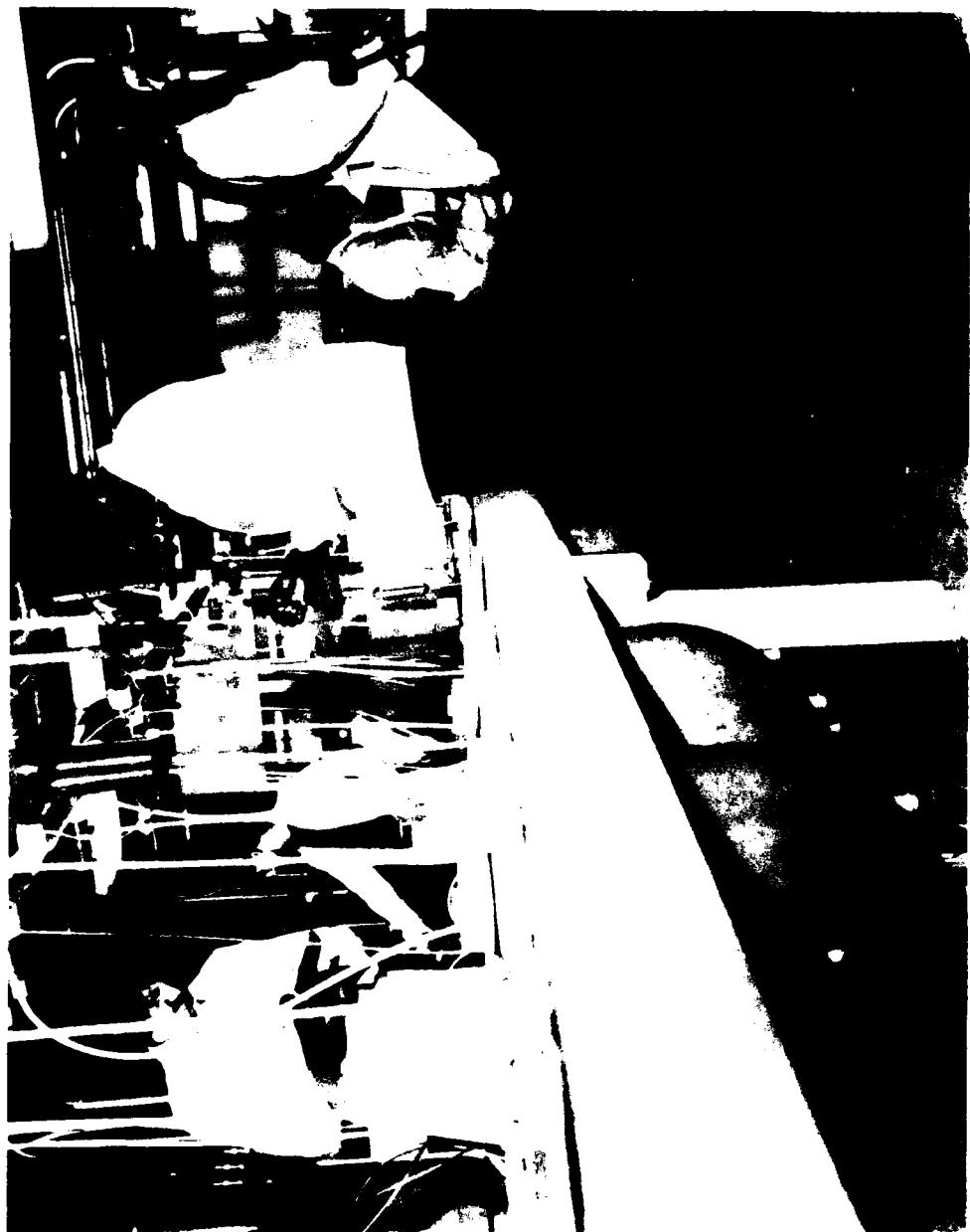


FIGURE 3

Controlled Environment Aquarium System
Being Used for Development and Refinement of
Bioassays and Bioaccumulation Procedures

There have been a variety of approaches utilized in attempting to predict the chemical impact that the disposal of dredged material will have on aquatic organisms. One of these, bulk sediment analysis, provides an estimate of the total constituents present, but it does not give an adequate estimate of the degree to which these constituents may be released or are biologically available. Elutriate procedures (a water or dilute acid leach) provide an estimation of release but are often inconclusive as to biological availability. Bioassays (Figure 3) provide a more direct indication of release, bioavailability, and toxicity. Development and refinement of bioassay techniques and interpretive procedures are underway. The work is coordinated with EPA and other regulatory agencies.

In conducting bioassays, it is essential that appropriate organisms be used to evaluate toxicity. To provide information to the field on the selection of appropriate species in various environmental and geographic regions, work is being conducted to develop a species selection guide for use with Section 103 of PL 92-532 and Section 404 of PL 92-500. A guidance document on sampling and analytical procedures for sediment and water is also in preparation and will be widely used in implementing these laws.

SECONDARY ACTIVITIES

Confined Disposal Sites Monitoring

Long-term studies are being conducted to characterize the leachate from four confined disposal sites to determine the degree of mobilization and movement of contaminants from the sites. The sites are located at or near Grand Haven, Michigan;

Sayreville, New Jersey; Pinto Island, Alabama; and Houston, Texas (Figure 2).

Habitat Development Sites Monitoring

Seven marsh and upland habitat development field sites established during the DMRP were chosen for continued monitoring (Figure 2). Three reference areas have also been selected for each field site and are being monitored. The location and description of the field sites and the objectives of the field study are given in Table 4.

The first two objectives shown in Table 4 are being accomplished through field sampling and data analysis of above ground and root biomass, species diversity, and stem density. Soil measurements include, at a minimum, nutrients, cation exchange capacity, and particle size. The third objective is being addressed through onsite inspection, topographic surveys, and aerial photography. Onsite inspection yield qualitative observations of the physical and biological status of the site. The aerial photography is interpreted for vegetation, species composition, and patterns of occurrence. Topographic surveys reveal changes in elevation and configuration of the site. A technical report is scheduled for publication in FY 82.

TABLE 4

HABITAT DEVELOPMENT FIELD STUDY SITES

Site Location	Type	Objectives*
Miller Sands, Columbia River, Oregon	Marsh, Upland	a, b, c
Bolivar Peninsula, Galveston Bay, Texas	Marsh, Upland	a, b, c
Windmill Point, James River, Virginia	Marsh	a, b, c
Buttermilk Sound, AIWW, Georgia	Marsh	a, c
Salt Pond 3, San Francisco Bay, California	Marsh	a, c
Drake Wilson Island, Apalachicola Bay, Florida	Marsh	c
Nott Island, Connecticut River, Connecticut	Upland	c

*Entries in this column are defined as follows:

a - Document, analyze, and compare characteristics of the plant communities and physical and chemical characteristics of the soils at marsh sites and reference areas.

- b - Document, analyze, and compare sediment characteristics and selected aquatic biota at each marsh site and reference area.
- c - Document and compare the overall conditions and appearance of the field sites with those of the reference areas.

Strip-Mine Reclamation Site Monitoring

During the DMRP, the feasibility of using dredged material to reclaim strip mines was studied at Ottawa, Illinois, with the assistance and cooperation of the Chicago District. Monitoring of this site (Figure 2) will continue in order to document changes in leachate water quality and potential for heavy metal uptake by plants.

Engineering Verification Studies

Research under the DMRP resulted in guidelines for designing, operating, and managing dredged material containment areas to meet effluent suspended solids standards as well as to provide adequate storage volume. Guidelines were also provided for dewatering fine-grained dredged material that was dredged during maintenance operations and was placed in confined disposal areas.

Field studies are underway to verify and refine the methodology for containment area sizing to optimize suspended solids retention, procedures for estimating hydraulic efficiency and weir design, procedures for suspended solids removal by chemical treatment, and methodologies for dredged material

dewatering. The locations of the sites and the parameters being characterized are given in Table 5.

TABLE 5

ENGINEERING VERIFICATION AND REFINEMENT SITES

<u>Site Location</u>	<u>Parameters*</u>
Fort Eustis, Virginia	S, H, D
Mobile, Alabama	S, H
Yazoo City, Mississippi	S, H, C
Charleston, South Carolina	D
Wilmington, Delaware	D
Cape Canaveral, Florida	S, D
Norfolk, Virginia	S, D

*Entries in the Column are defined as follows:

S = suspended solids retention; H = hydraulic efficiency; C = chemical treatment; D = dewatering effectiveness

Regulatory Activities - Upland Disposal

Concern has been expressed over the possible uptake of contaminants by plants in upland dredged material disposal areas and the subsequent transfer to animals. To determine the extent and conditions under which such a situation might occur, uptake studies are being conducted. The results of the studies will be used in regulatory decisions involving upland disposal.

Regulatory Activities - Wetlands Criteria

Implementation of Section 404 of the Clean Water Act currently places broad responsibilities on the Corps of Engineers in the regulation of dredge and fill activities in wetland areas. Determination of the landward limit of wetlands is in question because of the lack of definitive scientific information on the subject. Evaluation of permit and construction activities in wetlands may ultimately be based on the functional value of that resource. Specific qualitative and quantitative data on this subject are lacking.

Priority wetland research needs have been identified in two major areas. The first is to develop improved and standardized techniques to assist Corps of Engineers personnel in the identification and delineation of wetlands subject to jurisdiction under the Section 404 regulatory program. The second is the assessment and quantification of wetland values for use in the evaluation of permit activities, and to meet Corps of Engineers needs in planning, construction, and operational activities in wetland areas. Research into the identification and delineation of wetlands began in FY 78 and

should be completed in FY 83. Functional values research is proposed to begin in FY 82.

PROPOSED RESEARCH

Although the DMRP successfully addressed the primary concerns expressed in the early 1970's, over the short-term environmental impacts of dredged material disposal, it was not possible to completely evaluate long-term effects. This need has partially been addressed through the limited monitoring efforts at the DMRP field sites previously discussed. In testimony in early 1980, before the House Marine and Fisheries Committee and the House Science and Technology Committee, as well as before the Office of Management and Budget, the need for research on long-term effects was cited by the Corps. In the testimony, it was stated that research in this area would be initiated in FY 82. The research will place emphasis on interpretation of data from biological evaluations and on developing less costly testing procedures.

SUMMARY

The large number of requests for assistance indicates that the results of the DMRP are being widely implemented within and outside the Corps. Long-term monitoring and verification studies are well underway although no results are available during this early stage. The regulatory research is ongoing with close coordination with other regulatory agencies and will be expanded in FY 82 in order for the Corps to meet its dredging and regulatory mission while adhering to the intent of environmental legislation and interpretations.

CHAPTER 4: OCEAN DISPOSAL SITE DESIGNATION

Section 102(c) of the Marine Protection, Research, and Sanctuaries Act (MPRSA), as amended, authorizes the U. S. Environmental Protection Agency (EPA) to designate sites or times for the ocean disposal of waste material. On 11 January 1977, EPA promulgated regulations and criteria to implement MPRSA. The regulations established criteria and procedures for the selection and designation of ocean dredged material disposal sites (ODMDS). The regulations also designated, on an interim basis, 128 ODMDS pending completion of site designation studies. Based on the findings of each site designation study, the site's interim designation will be terminated or changed by formal rulemaking procedures to permanent designation for continuing use.

In 1978, the Corps of Engineers agreed to assist EPA in its site designation effort by providing funds for the collection of baseline data that would be used in the preparation of site designation Environmental Impact Statements (EIS's) and/or other technical documents. Necessary data collections and EIS preparation would be undertaken by Interstate Electronics Corporation (IEC) through the modification of an existing EPA contract. A total of 21 EIS's for 50 ocean disposal sites would be prepared by IEC. The contract was modified again in 1980 to include the preparation of an additional 7 EIS's for 12 ODMDS and the deletion of 2 EIS's for 3 sites. Presently, 59 ODMDS will be evaluated through 26 EIS's.

Those sites selected for study under the EPA contract with IEC were determined by EPA in consultation with the Corps and IEC. Regional priorities and possible application of the data to similar ODMDS's were considered in site selection. Furthermore, the selected sites receive approximately 95 percent of the material annually dredged and ocean disposed by

the Corps in its maintenance dredging program. For six of the selected sites, an adequate data base was found to exist; consequently, field studies were considered unnecessary. For the remaining selected sites, it was determined that at least two surveys would be required to acquire an adequate data base for site analysis. Field surveys were initiated by IEC in early 1979 and will be completed in mid-1981. To assist EPA in the technical evaluation of the collected data, the Dredging Operations Technical Support (DOTS) Program at the Waterways Experiment Station (WES) was assigned the responsibility for conducting the Corps' technical evaluation of contract documents.

For those interim sites not presently being evaluated by IEC and all new ocean dredged material disposal sites, Corps districts coordinating through DOTS will be responsible for developing the necessary data for site designation. To assist the districts in this endeavor, a procedural manual for surveys of ocean dredged material disposal sites has been prepared by TerEco Corporation under contract to DOTS. The manual provides technical guidance for developing field surveys, conducting field and laboratory analyses, and processing and interpreting data.

APPENDIX

TABULATION OF BASIC DATA BY CORPS OF ENGINEER DIVISIONS

APPENDIX

PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE	DISPOSAL SITE LAT/LONG	PROJ LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
						CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
NEW ENGLAND DIVISION												
Corps River, ME	Portland Harbor, Fore River, ME	Portland 43°31'06" 70°01'48"		No	Maint			838,110	1,131,448			Jan-Dec
Non-Corps MA-METH 80-116	Town River, MA	Marblehead 42°25'54" 70°34'54"		No						5,800	7,830	19-23 Aug
Non-Corps MA-MARN 79-418	Whittiers Cove, Proctor Cove & Manchester Harbor, MA	Marblehead 42°25'54" 70°34'54"		No						77,000	103,950	17 Oct-31
Non-Corps MA-BOSN 80-317	Chelsea River, MA	Marblehead 42°25'54" 70°34'54"		No						9,300	12,555	11-31 Dec
Non-Corps ME-PORE 80-164	Portland Harbor, Fore River, ME	Portland 43°31'06" 70°01'48"		No						3,110	4,198	20 Sep-4 Oct
Non-Corps ME-PORE 80-169	Portland Harbor, Fore River, ME	Portland 43°31'06" 70°01'48"		No						1,500	2,025	23-30 Dec
Non-Corps ME-PORE 79-311	Portland Harbor, Fore River, ME	Portland 43°31'06" 70°01'48"		No						62,905	84,922	27 May-11 Dec
Non-Corps ME-PORE 80-013	Portland Harbor, Fore River, ME	Portland 43°31'06" 70°01'48"		No						31,250	42,187	20 Apr-8 May

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE WITHIN 3 MILE LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL	SECTION 103	DISPOSAL DATES
					CU YDS	TONS			
Non-Corps ME-PORE 80-014	Portland Harbor Fore River, ME	Portland 43°31'06" 70°01'48"	No						28,574 38,575 27 Feb-21 Jun
Non-Corps ME-PORE 80-007	Portland Harbor Fore River, ME	Portland 43°31'06" 70°01'48"	No						
Non-Corps ME-PORE 80-026	Portland Harbor Fore River, ME	Portland 43°31'06" 70°01'48"	No						6,310 9,518 18-25 July
<u>NORTH ATLANTIC DIVISION</u>									
<u>New York District:</u>									
Corps	Bronx River, NY	Mud Dump 40°21'48" 73°51'28"	No	Maint			167,637	226,310	41,500 56,025 19 Mar-19 Apr 5-24 Oct
Corps	Westchester Creek, NY	Mud Dump 40°21'48" 73°51'28"	No	Maint					21 Jul-11 Aug
Corps	Red Hook Channel	Mud Dump 40°21'48" 73°51'28"	No	Maint	112,964	152,501	336,890	454,802	11 Aug-4 Oct 25-26 Oct
Corps	Ambrose Channel	Mud Dump 40°21'48" 73°51'28"	No	Maint 1,245,941	1,682,020		19-31 Aug		31 Aug-15 Nov
Corps	South Brother Island Channel (East River)	Mud Dump 40°21'48" 73°51'28"	No	Maint			31,000	41,850	23-31 Dec

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	WITHIN 3 MILE LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
						CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Non-Corps 10153	Hudson River, NY Mud Dump 40°21'48" 73°51'28"			No	No					4,000	5,400	10 Jun
Non-Corps 9104	Hudson River, NY Mud Dump 40°21'48" 73°51'28"			No	No					16,000	21,600	2-7 Jan
Non-Corps 9232	Port Newark - Port Elizabeth, Newark Bay	Mud Dump 40°21'48" 73°51'28"		No	No					97,200	131,220	17 Apr-16 May
Non-Corps 9244	Hudson River, NY Mud Dump 40°21'48" 73°51'28"			No	No					86,400	116,640	23 Apr-1 May
Non-Corps 9372	Hudson River, NY Mud Dump 40°21'48" 73°51'28"			No	No					252,000	340,200	8 Mar-7 Apr
Non-Corps 9571	Arthur Kill, NY Mud Dump 40°21'48" 73°51'28"			No	No					24,600	33,210	29 Apr-6 May
Non-Corps 9590	Passaic River, NJ	Mud Dump 40°21'48" 73°51'28"		No	No					8,000	10,800	2-3 June
Non-Corps 11284	Passaic River, NJ	Mud Dump 40°21'48" 73°51'28"		No	No					10,800	14,580	8-9 May
Non-Corps 11317	Gowanus Bay, NY Mud Dump 40°21'48" 73°51'28"			No	No					193,200	260,820	6-29 Oct

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	PROJ LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
						CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Non-Corps 11323	Hudson River, NY	Mud Dump 40°21'48" 73°51'28"	No							186,580	251,883	18 Mar-25 Apr
Non-Corps 11351	Fresh Kill, Arthur Kill, NY	Mud Dump 40°21'48" 73°51'28"	No							121,300	163,755	29 May-19 Sep
Non-Corps 11392	Kill Van Kull, NY	Mud Dump 40°21'48" 73°51'28"	No							133,890	180,752	23 May-18 Jun
Non-Corps 11525	Kill Van Kull, NY	Mud Dump 40°21'48" 73°51'28"	No							96,800	130,680	27 Oct-18 Dec
Non-Corps 11593	Kill Van Kull, NY	Mud Dump 40°21'48" 73°51'28"	No							3,600	4,860	14-16 Nov
Non-Corps 11644	Arthur Kill, NY	Mud Dump 40°21'48" 73°51'28"	No							32,400	43,740	5-15 Nov
Non-Corps 11653	East River, NY	Mud Dump 40°21'48" 73°51'28"	No							70,600	95,310	9-19 Nov
SOUTH ATLANTIC DIVISION												
Corps	Wilmington Harbor, NC	Wilmington 33°48'00" 78°01'00"	No	Maint	968,163	1,355,143		2 Jan-5 Mar				

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	PROJ TYPE	DISPOSAL SITE WITHIN 3 MILE LIMIT?		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
					CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Corps	Wilmington Harbor, NC	Wilmington 33°08'00" 78°01'00"	No	Maint					7,500	10,497	29-31 Dec
Corps	Morehead City Harbor, NC	Morehead City 34°39'00" 76°42'00"	No	Maint	32,226		45,107				10-21 Feb
Corps	Morehead City Harbor, NC	Morehead City 34°39'00" 76°42'00"	No	Maint	215,543		301,697				25 Mar-29 Apr
Charleston District											
Corps	Georgetown Harbor, SC	Georgetown Hbr No 33°01'58" 79°06'22"	No	Maint					321,524	546,591	Jan-Feb
Corps	Port Royal Harbor, SC	Port Royal Hbr No 32°09'24" 80°36'12"	No	Maint	105,422		179,217				Mar
Corps	Charleston Harbor, SC	Charleston Hbr Yes 32°38'35" 79°15'39"	Yes	Maint					905,032	1,538,554	Jan-Feb
Savannah District											
Corps	Savannah Harbor, GA	Savannah 31°57'00" 80°26'00"	No	Maint					741,064	1,111,600	Jan & May
Corps	Brunswick Harbor, GA	Brunswick 31°01'00" 81°17'00"	No	Maint					1,940,760	2,911,140	Feb-Apr

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE WITHIN 3 MILE LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
					CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Jacksonville District											
Corps	Fernandina Harbor, FL	Fernandina Harbor, FL	30°41'30" 81°18'30"	No	Maint	214,385	317,974				Jan-Feb Apr-Aug Nov-Dec
Corps	Jacksonville Harbor, FL	Jacksonville Harbor, FL	30°21'00" 81°18'00"	No	Maint	1,077,562	1,598,024				Jul-Aug
Corps	Canaveral Harbor, FL	Canaveral Harbor, FL	28°18'44" 80°31'16"	No	Maint			1,979,080	2,935,355		Jul-Nov
Corps	Ft. Pierce Harbor, FL	Ft. Pierce Harbor, FL	27°28'00" 80°12'00"	No	Maint			14,592	21,643		Oct
Corps	Palm Beach Harbor, FL	Palm Beach Harbor, FL	26°45'30" 79°58'21"	No	Maint	208,378	309,065				May
Corps	San Juan Harbor, PR	San Juan Harbor, PR	18°30'40" 66°09'00"	Yes	Maint	1,308,971	1,941,455				Jan-Mar
Corps	Charlotte Harbor, FL	Charlotte Harbor, FL	26°37'06" 82°19'21"	No	Maint			351,589	521,474		Feb-Apr
Corps	St. Petersburg Harbor, FL	Tampa Harbor, FL	27°37'06" 82°59'41"	No	New Work			23,000	34,113		Dec

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE WITHIN 3 MILE LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
					CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Corps	Tampa Harbor, FL	Tampa Harbor 27°37'06" 82°59'41"	No	New Work	395,874		587,157				May-Aug
Corps	Tampa Harbor, FL	Tampa Harbor 27°37'06" 82°59'41"	No	New Work	233,776		346,735				Jun-Jul
Corps	Tampa Harbor, FL	Tampa Harbor 27°35'34" 82°52'01"	No	New Work			303,191		449,690		Jun-Jul
Corps	Tampa Harbor, FL	Tampa Harbor 27°35'34" 82°52'01"	No	New Work			355,446		527,195		Nov
Corps	Tampa Harbor, FL	Tampa Harbor 27°35'43" 82°50'33"	No	New Work			1,255,621	1,862,326			Aug-Sep
Corps	Tampa Harbor, FL	Tampa Harbor 27°35'43" 82°50'33"	No	New Work			275,000	407,878			Oct
Corps	Tampa Harbor, FL	Tampa Harbor 27°35'25" 82°53'30"	No	New Work			200,000	296,638			Dec
Mobile District		Mobile Harbor, AL	Mobile Harbor 30°09'00" 88°07'00"	No	Maint	190,300		268,323			10 Feb-24 Mar

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	DISPOSAL SITE WITHIN 3 MILE LIMIT?		PROJ TYPE	CORPS CU YDS	VESSEL TONS	INDUSTRY CU YDS	VESSEL TONS	SECTION 103 CU YDS	TONS	DISPOSAL DATES
				Yes	Maint								
Corps	Gulfport Harbor, MS	Gulfport Hbr 30°01'00" 88°57'00"		Yes	Maint				369,230	520,614			24-31 Dec
LOWER MISSISSIPPI VALLEY DIVISION													
<i>New Orleans District</i>													
Corps	Calcasieu River Bar Channel 1	Calcasieu 29°42'30" 93°20'30"		No	Maint				7,804,057	8,323,027			12 Jun-5 Nov
Corps	Miss. River - Gulf Outlet	Miss. R.-G.O. 29°02'00" 89°05'00"		No	Maint	1,095,106			1,066,039	1,136,930			
Corps	Miss. River - SW Pass	Miss. R. - SW Pass 28°53'00" 89°26'30"		Yes	Maint	6,315,082			6,668,727				9 Mar-20 Apr
38													2 Jan-30 Jul
SOUTHWESTERN DIVISION													
<i>Galveston District</i>													
Corps	Galveston Hbr & Channel, TX	29°17'00" 94°39'00"		No	Maint				1,524,269	1,547,589			May-Aug
Corps	Freeport Harbor, TX	28°54'00" 95°17'00"		Yes	Maint	329,372			509,538				Jan-Feb
Corps	Mataforda Ship Chan, TX	28°24'00" 96°18'00"		Yes	Maint	646,826			1,000,640				Aug-Sep
						118,924			183,975				Nov-Dec
									1,551,512	2,643,776			Aug-Oct

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	WITHIN LIMIT?	PROJ TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
						CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Corps	Corpus Christi Chan, TX	29°49'00" 97°00'00"	Yes	Maint	1,663,879	2,835,249						AUG-NOV
<u>SOUTH PACIFIC DIVISION</u>												
Los-Angeles District	Non-Corps	Long Beach 79-133	Los Angeles 33°37'06" 118°17'24"	No						60,000	90,000	1 Aug-31 Dec
San Francisco District	San Francisco Harbor, CA	S.F. Chan. 37°05'06" 122°35'45"	Bar Yes	Maint	52,920	78,150						3-5 Jan
Corps	Humboldt Harbor & Bay, CA	Humboldt 40°45'44" 124°15'42"	Yes	Maint	69,000	96,485						20 Sep-10 Oct
Corps	Humboldt Harbor Field's Landing	Humboldt 40°45'44" 124°15'42"	Yes	Maint	23,500	32,065						15-18 Oct
Corps	Humboldt Harbor Bar & Entrance	Humboldt 40°45'44" 124°15'42"	Yes	Maint	224,562	366,815						8-16 May
<u>NORTH PACIFIC DIVISION</u>												
Portland District	Corps	Mouth of Columbia R., OR	Area "E" 46°15'27" 124°05'37"	Yes	Maint	2,660,908	4,467,005					
												Apr-May Jul-Aug

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PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	DISPOSAL SITE WITHIN 3 MILE LIMIT?		PROJ TYPE	CORPS CU YDS	VESSEL TONS	INDUSTRY CU YDS	VESSEL TONS	SECTION 103 CU YDS TONS	DISPOSAL DATES
				Yes	Maint							
Corps	Columbia & Lower Area "E" Willamette, OR	46°15'27" 124°05'37"	Area "A" 46°12'40" 124°06'30"	Yes	Maint	14,814	24,831					Apr, Sep
Corps	Mouth of Columbia R., OR	46°14'10" 124°10'30"	Area "B" 42°01'47" 124°16'21"	No	Maint	11,142	18,705					Aug-Sep
Corps	Chetco River, OR	46°14'10" 124°16'21"	Chetco R. Ent.	Yes	Maint	118,686	199,244					Apr-May Jul-Aug
Corps	Coquille River, OR	43°07'37" 124°27'00"	Coquille R. 43°21'47" 124°22'25"	Yes	Maint	54,300	101,149					Apr-May
Corps	Coos Bay, OR	43°21'47" 124°22'25"	Coos Bay Ent.	Yes	Maint	2,500	4,439					Apr-May
Corps	Coos Bay, OR	43°21'47" 124°22'25"	Coos Bay Ent.	Yes	Maint	193,939	325,240					Feb Jul-Aug
Corps	Coos Bay, OR	43°22'30" 124°21'57"	Coos Bay Ent.	Yes	Maint	955,436	1,602,289					Feb Jul-Aug
Corps	Umpqua River, OR	43°40'00" 124°14'00"	Umpqua R.	Yes	Maint	199,800	353,541					Jun-Oct

APPENDIX

PROJECT CATEGORY	DISTRICT AND PROJECT TITLE	DISPOSAL SITE LAT/LONG	DISPOSAL SITE LAT/LONG	PROJ LIMIT?	TYPE	CORPS VESSEL		INDUSTRY VESSEL		SECTION 103		DISPOSAL DATES
						CU YDS	TONS	CU YDS	TONS	CU YDS	TONS	
Corps	Siuslaw River, OR	Siuslaw R. 44°01'23" 124°09'22"		Yes	Maint	94,200		159,522				Jun-Aug
Corps	Yaquina Bay, OR	Yaquina Bay 44°36'24" 124°05'40"		Yes	Maint	81,146		142,884				Aug
Alaska District												
Corps	Nome Harbor, AK	Nome 64°31'00" 165°25'00"		Yes	Maint					13,000	22,000	June-Sep
PACIFIC OCEAN DIVISION												
Corps	Honolulu Harbor, HI	Honolulu 21°14'30" 157°54'30"		No	New York					392,400	581,100	Jan-Dec
Non-Corps	Honolulu 1235-S Harbor, HI	Honolulu 21°14'30" 157°54'30"		No								
										81,100	120,000	Apr-Dec